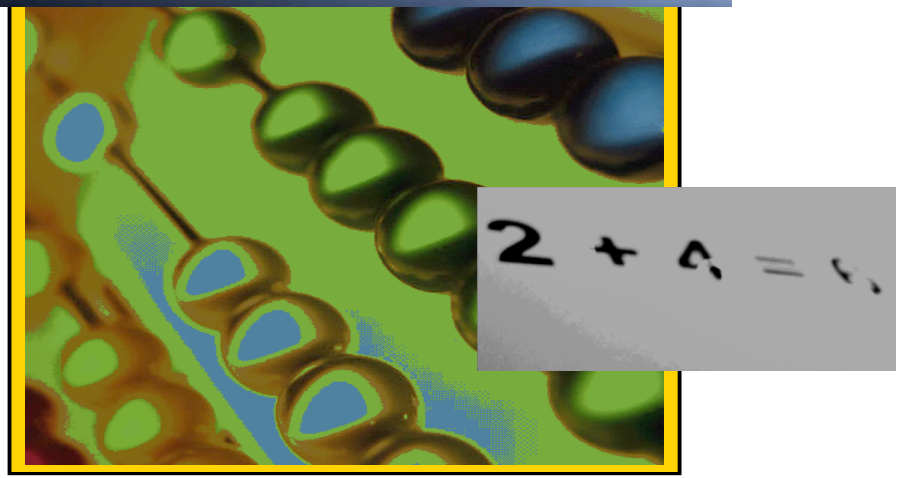
Georgia Adult Education

MATHEMATICS
CONTENT STANDARDS



MATHEMATICS
ABE I – Beginning Literacy (0.0 – 1.9)

STANDARDS

The learner will be able to…

- **A. Develop and apply number sense to solve a variety of real-life problems and determine if the results are reasonable.**
- **B. Apply data collection, data analysis, and probability to interpret, predict, and/or solve real-life problems.**
- **C. Use geometric properties, relationships, and methods to identify, analyze, and solve real-life problems.**
- **D. Apply knowledge of standard measurements to real-life situations.**

INDICATORS *Knowledge and Skills*	**BENCHMARKS** *Application Skills*	**SAMPLE ACTIVITIES** *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
A.1 Count, group, read, and write whole numbers to 100.	A.1.1 Count to 100 by ones, twos, fives, and tens.	**Family Literacy** A.1.1 The learner practices counting with a preschooler at home.
	A.1.2 Read and write numbers to 100.	A.1.2 The learner identifies numbers in a game of UNO played with family members or in class.
	A.1.3 Skip-count by 2, 5, or 10.	**Basic Literacy** A.1.3 The learner fills in spaces of missing numbers on a worksheet.
	A.1.4 Compare pairs of numbers to 100 using words: "more", "less", "equal".	**Consumer Literacy** A.1.4 The learner identifies which food items have more, less or equal counts from labels.
	A.1.5 Read names of numbers through ten.	**Basic Literacy** A.1.5 The learner reads a list of number names.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to. . .		
A.2 Recognize place value of whole numbers to 100.	A.2.1 Identify objects by ordinal positions to tenth.	**Basic Literacy** A.2.1 The learner describes the meaning of number positions.
	A.2.2 Recognize and identify the value of a digit in a two-digit numeral depending upon its place in a number.	A.2.2 The learner verbally identifies the value of digits as called out in class.
A.3 Recognize and understand the value of U.S. coins and currency.	A.3.1 Identify U.S. coins and their values: penny, nickel, dime, quarter.	**Family Literacy** A.3.1 The learner counts values of play money using nickels, dimes and quarters.
	A.3.2 Recognize and identify the value of U.S. bills: 1, 5, 10, 20, 50, and 100.	**Consumer Literacy** A.3.2 The learner plays a game of Monopoly identifying play money to make purchases.
A.4 Recognize and use of the following mathematical symbols +, -, =.	A.4.1 Enter a series of numbers and math symbols (+, -, =) on a calculator or computer.	**Basic Literacy** A.4.1 The learner computes the total of a series of numbers using a calculator.
A.5 Solve whole number problems involving addition and subtraction.	A.5.1 Add and subtract pairs of two-digit whole numbers that do not require grouping.	A.5.1 The learner adds and subtracts two digit numbers after identifying the necessary operation by the symbol.
	A.5.2 Solve both one digit and two-digit addition and subtraction problems given in both vertical and horizontal notation.	**Consumer Skills:** A.5.2 The learner prepares a shopping list from a sales flyer and adds items not to exceed $100.00.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to. . .		
B.1 Read, analyze, and interpret graphs, charts and other formats.	**Basic Literacy** B.1.1 Identify, describe, and represent relationships displayed in graphs, charts, and other formats.	**Workplace Literacy** B.1.1 The learner reads and explains a graph show a worker's production record.
	B.1.2 Identify how lists can be ordered in different ways such as alphabetically, numerically, or randomly.	B.1.2 The learner checks items on a stock list.
	B.1.3 Make a one-to-one comparison of two columns within a chart.	**Health & Family Literacy** B.1.3 The learner reads a nutritional graph in a health poster and explains or answers questions about the information.
	B.1.4 Demonstrate an understanding that the height of the bar is equal to the amount on the axis across from it.	B.1.4 The learner reads a height-weight chart and is able to plot statistic of family members.
	B.1.5 Explain how comparative statements such as "greater than" or "less than" can be made based on the height of the bars.	B.1.5 The learner interprets a bar graph in a newspaper of drought conditions and indicates which represent "greater than and which are "less than".
	B.1.6 Locate the titles and explain that titles indicates subject matter.	B.1.6 The learner locates titles as directed.
C.1 Identify geometric shapes.	C.1.1 Identify the following plane figures: circle, square, rectangle, and triangle.	**Basic Literacy** C.1.1 The learner identifies the shape and meaning of a triangular yield sign and other shapes in buildings and environmental settings.
	C.1.2 Describe similarities and differences of two and three dimensional shapes (e.g. Number of corners, edges, faces, sides).	**Family Literacy** C.1.2 The learner identifies the shape of traffic signs from a driver's manual and its meaning.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to. . .		
D.1 Identify standard measurement.	D.1.1 Measure length in inches and feet using a ruler.	**Family Literacy** D.1.1 The learner measures the length and width of a rectangular photo frame and tells the teacher the dimensions of the frame.
	D.1.2 Measure weight in ounces and pounds using a scale.	**Health Literacy** D.1.2 The learner determines the weight a food item brought from home on a scale used to measure portions.
	D.1.3 Measure capacity in ounces, cups, pints, quarts, gallons.	D.1.3 The learner tells the difference between a gallon, a quart and a cup of milk and determines how many people can get a glass from a quart.
	D.1.4 Read a thermometer in degrees Fahrenheit both for weather and body temperature purposes.	D.1.4 The learner determines water temperature when a thermometer is placed into hot water.
	D.1.5 Compare measurement of objects using words: "more or less", "heavier or lighter", "longer or shorter", "hotter or colder".	D.1.5 The learner compares pictures of objects and indicates differences (e.g. cup of milk to gallon of milk—more or less).
	D.1.6 Determine which unit of measurement and measurement tool is appropriate for a particular object.	D.1.6 The learner tells what should be used to measure the size of a picture frame, sugar, fruit, and freezer.
PERFORMANCE MASTERY STANDARDS	**TABE (9-10)** **Scale Score - Reading 367 or Higher** **Scale Score - Math 313 or Higher** **Grade Equivalent 2.0+**	

MATHEMATICS
ABE II – Beginning Basic Education (2.0 – 3.9)

STANDARDS

The learner will be able to . . .

- **A. Develop and apply number sense to solve a variety of real-life problems and to determine if the results are reasonable.**
- **B. Apply data collection, data analysis, and probability to interpret, predict, and/or solve real-life problems.**
- **C. Apply algebraic concepts and methods to explore, analyze, or solve real-life problems.**
- **D. Use geometric properties, relationships, and methods to identify, analyze, and solve real-life problems.**
- **E. Apply knowledge of standard measurements to real-life situations.**
- **F. Use number sense, concepts, and operations involving fractions.**

INDICATORS *Knowledge and Skills*	**BENCHMARKS** *Application Skills*	**SAMPLE ACTIVITIES** *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
A.1 Recognize place value of whole numbers to 1000.	A.1.1 Recognize that the value of a digit will vary depending upon its place in a number.	**Workplace Literacy** A.1.1 The learner reads mileage on the (trip indicator) odometer of a car.
	A.1.2 Round and estimates using place value.	A.1.2 The learner rounds numbers on a worksheet.
	A.1.3 Read and write numbers to 1000.	A.1.3 The learner conducts stock inventory of items (e.g. from a worksheet with pictures of items they must count and record on a stock inventory sheet).
	A.1.4 Identify odd and even numbers.	A.1.4 The learners tells which side of a street a house will be on from its number.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
A.2 Solve whole number problems involving addition and subtraction of multi-digit numbers.	A.2.1 Explain properties of (0) and (1).	**Basic Literacy** A.2.1 The learner tells which number has value (0, 1).
	A.2.2 Add and subtract three digit numbers with and without regrouping.	**Consumer Literacy** A.2.2 The learner enters checks and deposits into a check register and balances the account from a list of transactions provided.
	A.2.3 Memorizes addition and subtraction facts for mastery of accuracy and time.	**Basic Literacy** A.2.3 The learner fills in the blanks on a worksheet with addition and subtraction facts.
	A.2.4 Solves addition and subtraction word problems manually with a computer or calculator.	A.2.4 The learner solves word problems presented using a calculator.
A.3 Solve whole number problems involving mastery of multiplication and division facts.	A.3.1 Memorize multiplication and division facts for mastery of accuracy and time.	**Family Literacy** A.3.1 The learner finds how much each class member pays if the cost of pizza is split equally.
	A.3.2 Multiply whole numbers with or without regrouping.	A.3.2 The learner works out how many cars are needed to transport a group of people (varying numbers).
	A.3.3 Divide by one digit numbers.	A.3.3 The learner figures how much rent is owed if he and his brother (sister) divided the rent equally.
	A.3.4 Solve multiplication and division word problems.	A.3.4 The learner solves word problems such as: If 4 pizzas are ordered for class costing $9.50 each, what is the total cost and what does each class member owe.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
A.4 Model problem-solving using manipulatives	A.4.1 Total the cost of several items and compute correct change.	**Consumer Literacy** A.4.1 The learner makes out a grocery list and determines what is affordable from a local sale paper based upon a given amount of money.
	A.4.2 Solve a variety of problems using simple checkbook computational skills.	A.4.2 The learner maintains a personal checkbook recording checks written and deposits from a list of transactions provided.
	A.4.3 Add, subtract, multiply, and divide using coins.	A.4.3 The learner figures out how money is needed to make purchases from a school store using play coins.
	A.4.4 Add, subtract, multiply, and divide using a calculator	A.4.4 The learner calculates numbers on a worksheet using a calculator.
	A.4.5 Demonstrate computation skills using base ten manipulatives.	A.4.5 The learner participates as a group member each member must perform a calculation using base ten as directed by the teacher, upon missing the learner must sit down, the last one standing wins.
B.1 Read, analyze, and construct graphs and charts.	B.1.1 Identify relationships displayed in graphs, charts, and other formats (rows/columns, titles, labels, etc.) .	**Family Literacy** B.1.1 The learner explains the meaning of a chart of fat and caloric content of food items.
	B.1.2 Demonstrate an understanding that lists can be ordered in different ways such as alphabetically, numerically, and randomly.	B.1.2 The learner organizes two lists of class members, one in alphabetic order and the second in numeric order by age (or height).
	B.1.3 Demonstrate an ability to read and interpret the information in circle, bar, line, pictographs, charts, maps and tables (e.g. heights and circle wedges show quantity).	**Family Literacy** B.1.3 The learner makes a chart of the family's favorite foods by stacking pictures and determining what is most favored.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
B.1 Read, analyze, and construct graphs and charts.	B.1.4 Demonstrate an understanding that comparative statements such as: "greater than" or "less than" twice and half can be made based on the height of the bars.	**Basic Literacy** B.1.4 The learner collects data on the number of people who walk, ride the bus or drive to class and makes comparative statements "greater than" or "less than".
	B.1.5 Know how to locate data labels in tables and graphs (e.g. titles indicate subject matter) to connect data and verify arguments/statements.	B.1.5 The learner reads a chart in a publication identifies the meaning of titles and tells what the data shows.
	B.1.6 Demonstrate how to keep track of collected data.	B.1.6 The learner conducts a survey of family members' favorite foods and records answers in a graph.
B.2 Analyze and interpret problems using probability.	B.2.1 Understand that while some events are impossible, some are certain to happen, and some are more likely to occur than others.	B.2.1 The learner identifies 3 things that are most likely, less likely, or equally likely to occur in his/her life.
	B.2.2 Demonstrate an understanding that probability depends on the total number of possibilities.	B.2.2 The learner makes the call when flipping a coin or rolling dice and explains the odds of winning.
C.1 Identify and apply key words to mathematical operations.	C.1.1 Recognize that math has only four operations: addition, subtraction, multiplication, and division.	C.1.1 The learner identifies the operation required when the teacher reads a problem (e.g. We have 15 students in this class, how do we determine the number of males?).
	C.1.2 Identify key words and determine which operations are required to solve word problems:	C.1.2 The learner identifies the operation to use based upon the desired results (e.g. you have two children who need shoes, if the shoes are $10 a pair, what would be the total cost of the shoes).
	C.1.3 Perform with 80 % or better accuracy all four basic math operations using whole numbers up to three digits.	C.1.3 The learner calculates worksheets and exchanges papers with classmates to check results make corrections and submits papers to teacher.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
C.2 Interpret relationships using mathematical expressions.	C.2.1 Identify and uses all basic mathematical symbols and concepts of equal (=), less than (<), and greater than (>).	**Consumer Literacy** C.2.1 The learner identifies the symbol to represent values comparing money spent for food, clothing, and rent.
	C.2.2 Solve a variety of application problems using whole numbers.	C.2.2 The learner calculates the number of hours he/she must work to pay for a movie or a new TV set.
D.1 Identify geometric shapes. .	D.1.1 Identify simple solid geometric shapes (cylinder, cube, cone, rectangular solid, sphere, and prism).	**Basic Literacy** D.1.1 The learner identifies streets in their neighborhood that intersect, are parallel and are perpendicular, then draw an illustration to prove understanding.
	D.1.2 Identify geometric shapes in real-life situations.	D.1.2 The learner compares use of shapes in house construction, room design, and can draw a rough design of a rectangular room.
	D.1.3 Exhibit visualization and spatial reasoning.	**Workplace Literacy** D.1.3 The learner draws a scale model of a room in the workplace or the classroom.
E.1 Identify standard measurement and tools required.	E.1.1 Measure length in inches, feet, yards, centimeters and meters using a ruler.	**Family Literacy** E.1.1The learner measures dimensions of items needed in a home (e.g. windows for drapes, room size for rug, and wall space for alignment of a picture).
	E.1.2 Demonstrate an ability to read time on an analog and digital clock to the minute.	E.12 The learner identifies time on worksheets showing time in analog and digital time.
	E.1.3 Measure weight in ounces and pounds using a scale.	E.1.3 The learner uses measurements to prepare a recipe.
	E.1.4 Measure capacity in standard and metric units.	E.1.4 The learner measures the number of liters of water in a canister.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
E.1 Identify standard measurement and tools required.	E.1.5 Compare measurement of objects using words: "more or less", "heavier or lighter", "longer or shorter", "hotter or colder".	**Health Literacy** E.1.5 The learner determines a child's desired height and weight from a growth chart and if the child is heavier or lighter, taller or shorter than the norm.
F.1 Model, identify and label operations involving fractions.	F.1.1 Identify fractions by using manipulatives.	**Family Literacy** F.1.1 The learner divides food items into fractions and identifies the part (e.g. 1/2 and ¼, etc.).
	F.1.2 Associate verbal names, written word names, and standard numerals with commonly used fractions.	F.1.2 The learner matches fractions with the written names.
	F.1.3 Understand that commonly used fractions can be represented in other equivalent forms such as decimals.	F.1.3 The learner converts fractions to decimal forms.
	F.1.4 Write numbers in fraction form.	F.1.4 The learner writes the fraction form of items on a worksheet in pictorial or written words.
PERFORMANCE MASTERY STANDARDS	**TABE (9-10)** **Scale Score - Reading 461 or higher** **Scale Score - Math 442 or higher** **Grade Equivalent 4+**	

MATHEMATICS
ABE III – Low Intermediate Basic Education 4.0 – 5.9)

STANDARDS

The learner will be able to…

- **A. Develop and apply number sense to solve a variety of real-life problems and to determine if the results are reasonable.**
- **B. Apply fractional concepts and methods to explore, analyze, or solve real-life problems.**
- **C. Use number sense, concepts, and operations involving decimals.**
- **D. Use estimation to problem solve and compute.**
- **E. Apply knowledge of standard measurements to real-life situations.**
- **F. Apply algebraic concepts and methods to explore, analyze, or solve real-life problems.**
- **G. Apply data collection, data analysis, and probability to interpret, predict, and /or solve real-life problems.**
- **H. Use geometric properties, relationships, and methods to identify, analyze, and solve real-life problems.**

INDICATORS *Knowledge and Skills*	**BENCHMARKS** *Application Skills*	**SAMPLE ACTIVITIES** *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
A.1 Apply mathematical concepts to solve problems.	A.1.1 Identify whole numbers combining up to 7-digit numeration.	**Workplace Literacy** A.1.1 The learner reads route numbers on delivery labels.
	A.1.2 Associate verbal names, written word names, and standard numerals with whole numbers.	**Basic Literacy** A.1.2 The learner writes out numeral street names (First Street, Fifth Street, Seventeenth Street, etc.)
	A.1.3 Understand prime and composite numbers	A.1.3 The learner identifies prime and composite numbers from a randomly generated list of numbers.
	A.1.4 Identify factors of numbers.	A.1.4 The learner creates factor trees for several of composite numbers.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
A.2 Solve whole number problems involving addition and subtraction of multi-digit numbers.	A.2.1 Add and subtract multi-digit numbers, with and without regrouping, in both horizontal and vertical notation.	**Family/Consumer Literacy** A.2.1 Set up a school store with donated items; the learner rotates managing the store and must keep track of inventory and profits.
A.3 Solve whole number problems involving multiplication and division of multi-digit numbers	A.3.1 Multiply multi-digit numbers by multi-digit numbers	A.3.1 The learner determines how many buses are needed to transport three classes of children to the zoo. (Teacher determines size of classes and capacity of buses).
	A.3.2 Divide multi-digit numbers by multi-digit numbers with or without remainders.	A.3.2 The learner calculates the number of packs of hot dogs needed to serve the class, 2 hot dogs per person at an event.
	A.3.3 Prove (checks) multiplication and long division problems.	A.3.3 The learner checks figures in A.3.2 and A.3.1.
B.1 Understand and apply fractional concepts in mathematical problems.	B.1.1 Identify the difference between a part and a whole; and relative size of commonly used fractions.	B.1.1 The learner determines how many pizzas are needed to feed a family of 5, each member eats ½ portions.
	B.1.2 Identify the numerators and denominators in fractions.	B.1.2 The learner writes the fraction to represent major marks on the gas meter in a car (1/2, ¼) and identifies what is the numerator and what is the denominator.
	B.1.3 Associate verbal names, written word names, and standard numerals with commonly used fractions.	**Basic Literacy** B.1.3 The learner gives the written name of ½ and ¼ , ¾ , 1/3, 2/3, etc.
	B.1.4 Identify the relative size of commonly used fractions.	B.14 The learner reads fractions used in a recipe and show the amount if recipe is doubled.
	B.1.5 Identify proper, improper, equivalent, and mixed fractions.	B.1.5 The learner matches fractions with the type (e.g. proper, improper, etc.)

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
B.1 Understand and apply fractional concepts in mathematical problems.	B.1.6 Convert mixed fractions and improper fractions.	**Family Literacy** B.1.6 The learner plays a game converting fractions (mixed to improper) in turns, sits down when incorrect, the last learner standing gets a treat.
	B.1.7 Find and convert fractions to the lowest common denominator.	B.1.7 The learner doubles a recipe and identifies the changes in amounts, reducing the fractions to their lowest common denominators.
	B.1.8 Convert numbers to fractions and fractions to equivalent forms of decimals and percents.	B.1.8 Same basic exercise as in B.1.6 with required changes relative to this benchmark.
B.2 Identify, label, and solve problems involving fractions.	B.2.1 Add and Subtract fractions with common- and unlike-denominators.	**Basic Literacy** B.2.1 The learner generates solutions using mental mathematics in situations involving common unit fractions.
	B.2.2 Multiply mixed fractions by mixed fractions and proper fractions by whole and mixed numbers.	B.2.2 The learner solves fraction problems using a calculator.
C.1 Understand and apply decimal concepts in mathematical problems.	C.1.1 Associate written word names and standard numerals with decimals (tenths, hundredths, and thousandths.	C.1.1 The learner matches lists of written decimal names with numerals.
	C.1.2 Demonstrate the how decimals can represent other equivalent forms.	**Workplace Literacy** C.1.2 The learner completes a time sheet to include converting minutes to fractions of an hour and then into decimals to determine weekly pay.
	C.1.3 Describe the relationship between money and decimals.	C.1.3 The learner identifies the portion of weekly pay that is a decimal and what it means.
	C.1.4 Convert common fractions to decimals and decimals to fractions.	C.1.4 The learner converts fractions of an hour to decimal on a time sheet to figures pay.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
C.2 Identify, label, and solve problems involving decimals.	C.2.1 Solve problems involving addition, subtraction, multiplication of decimals by hand and with a calculator.	**Consumer Literacy** C.2.1 The learner figures one's share of a restaurant bill when the bill is being divided equally between several people.
	C.2.2 Select the appropriate operation to solve specific problems involving decimals.	C.2.2 The learner works in a group with a partner discusses the appropriate operation to solve a problem as directed by the teacher and then solves the problem.
D.1 Apply mathematical concepts and procedures to make estimation .	D.1.1 Use and justify different estimation strategies in real-life problems and determine the reasonableness of results.	D.1.1 The learner selects the appropriate operation to solve a problem and demonstrates the reasonableness of results.
	D.1 .2 Round a whole number less than one million to any designated place.	D.1.2 The learner rounds off numbers from the stock exchange section of the newspaper.
	D.1.3 Round fractions and mixed number to the nearest whole number.	**Consumer Literacy** D.1.3 The learner purchases produce and rounds amounts to nearest whole number.
	D.1.4 Use rounding techniques to estimate the solution to a problem, and then determine the actual result.	D.1.4 The learner estimates the solutions to problems and then performs calculations to prove results.
	D.1.5 Use inequality signs in comparing decimals and fractions.	D.1.5 The learner fills in the blanks on a form with decimals and fractions indicating using = and ≠.
E.1 Identify and convert measurements using standard measurements and tools.	E.1.1 Write abbreviations for length, weight, and capacity measurements in the U.S. and metric systems.	**Family Literacy** E.1.1 The learner measures a baby's length in inches.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
	E.1.2 Identify equal measures defined in different units.	**Basic Literacy Skills** E.1.2 The learner measures approximately how many square feet of carpeting it would take to cover a room and converts the measurements to metric.
	E.1.3 Solve measurement problems in the U.S. and metric systems using addition or subtraction without conversion.	E.1.3 The learner measures a wall to determine the placement of a picture centered.
	E.1.4 Calculate elapsed time.	E.1.4 The learner calculates leave time earned over a specified period of time on the job.
	E.1.5 Determines temperature using Fahrenheit or Celsius thermometer.	**Health Literacy** E.1.5 The learner reads a thermometer after it is emerged in a glass of water at different temperatures.
	E.1.6 Determines capacity by measuring quantities in teaspoons, tablespoons, cups, pints, quarts, gallons and liters.	**Workplace Literacy** E.1. 6 The learner calculates the number of hours worked, minus breaks and lunch given base data.
	E.1.7 Recognize, use, measure, and interpret linear dimensions and geometric shapes.	E.1.7 The learner locates shapes in the classroom, measures and describes the shape and dimensions.
	E.1.8 Recognize and interpret usage of measurement instruments, such as rulers, scales, gauges, and dials.	**Consumer Literacy** E.1.8 The learner reads and interprets scales in a supermarket, grocery store or portion scale used for dieting and weighs a series of items.
E.1 Identify and convert measurements using standard measurements and tools.	E.1.9 Interpret diagrams, illustrations, and scale drawings such as maps and bar graphs.	**Family Literacy** E.1.9 The learner infers distances on a roadmap between two designated points.
	E.1.10 Convert equivalent measurements of standard and	**Consumer Literacy**

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
	metric units and calculate cost of items (e.g. per gallon, unit, liter, or quart).	E.1.10 The learner converts standard measures to metric units and determines the cost per metric unit given the cost of the item in standard measurements.
F.1 Use algebraic concepts to solve problems.	F.1.1 Translate simple word problems involving unknown quantities into simple equations.	**Family Literacy** F.1.1 The learner describes in written form the decorative pattern of an item in their home.
	F.1.2 Discover patterns, identify rules, and find values in an "input-output" table.	F.1.2 The learner completes SUDOKU puzzles from a puzzle book purchased from the dollar store.
	F.1.3 Read and write an equation following convention in notation and order of operation.	**Consumer Literacy** F.1. 3 The learner writes a formula to determine the cost of one hotdog in a package.
	F.1.4 Test the effectiveness of a developed formula by substituting known values.	F.1.4The learner determines how much money will be earned with overtime at time and a half.
	F.1.5 Interpret the meaning of operations (+,-, x, ÷, =,≠).	**Basic Literacy** F.1.5 The learner describes what function to perform based upon the operations sign.
.	F.1.6 Describe the order of operations for content within a parenthesis (distributive property) in multi-step problems.	F.1.6 The learner describes the order of operation to solve problems pulled at random from an envelope.
	F.1.7 Demonstrate an understanding that variable represents a missing value in addition and subtraction expressions.	
F.1 Use algebraic concepts to solve problems.	F.1.8 Explain that addition/subtraction and multiplication/division are inverse operations and how to use inverse operations to find the unknown in a one-step equation.	**Basic Literacy** F.1.8 The learner selects the operation to use when given different problems to solve and identifies the inverse of the operation used.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
	F.1.9 Demonstrate an understanding that horizontal number line moves from left to right using lesser to greater values and that values follow a constant progression including positive and negative numbers.	F.1.11 The learner participates in a group activity, the teacher forms groups, give each group an envelope with 15-20 numbers. Have teams sort #s from smallest to largest. Fastest team to do so correctly wins!
G.1 Read, analyze, and interpret graphs and charts.	G.1.1 Distinguish patterns and relationships through models, such as manipulatives, tables, graphs, and rulers.	**Family Literacy** G.1.1 The learner compares weather temperatures of various cities from the newspapers, then charts and answers questions such as the highest, lowest, average temperature, etc.
	G.1.2 Translate a problem from words into a numerical sentence.	G.1.2 The learner writes a formula translating a word problem.
	G.1.3 Solve problems by generating, collecting, organizing, displaying, and analyzing data using bar graphs, circle graphs, line graphs, pictographs, and charts.	G.1.3 The learner gathers data of the items eaten for breakfast over a week by family members and plots the information on a graph.
	G.1.4 Interpret data in charts, tables, plots, graphs, and maps.	**Basic Literacy** G.1.4 The learner constructs a pie graph of job classifications of jobs where he/she works or of classmates.
G.1 Read, analyze, and interpret graphs and charts.	G.1.5 Conduct calculations to find averages/means.	**Basic Literacy** G.1.5 The learner gathers ages of class members and determines the average age.
G.2 Collect and utilize data to solve real-life problems.	G.2.1 Identify the components of a budget and set up a personal budget.	**Family/Consumer Literacy** G.2.1 The learner keeps a record of the amount spent on food for a week (bring receipts to class) and after collecting other expenses creates a family budget.
	G.2.2 Make price comparisons using advertisements, labels, charts, articles, price tags, or other information and	G.2.2 The learner completes a catalog order and/ or demonstrates steps for ordering on the internet and

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
	compute sales tax.	determines sales tax due.
	G.2.3 Demonstrate how to write a money order and check and balance a check register.	**Consumer Literacy** G.2.3 The learner demonstrates how to add money to a bank account (deposit slip and check register) and maintain a register balance.
H.1 Identify and apply geometric properties to problems.	H.1.1 Understand the concepts of spatial relationships, symmetry, reflections, congruency, and similarity.	H.1.1 The learner finds the area of a square room.
	H.1.2 Recognize and apply geometric formulae for perimeter and area of squares, rectangles, triangles, cubes, and rectangular solids.	H.1.2 The learner compares and contrasts characteristics of simple solid geometric figures found in their homes or the workplace.
	H.1.3 Represent and apply a variety of strategies and geometric properties and formulae for two and three-dimensional shapes to solve real-life and mathematical problems.	**Family Literacy** H.1.3 The learner identifies streets in their neighborhood that intersect, are parallel and/or perpendicular.
PERFORMANCE MASTERY STANDARDS	**TABE (9-10)** **Scale Score - Math 506 or Higher** **Scale Score - Reading 518 or Higher** **Grade Equivalent 6+**	

MATHEMATICS
ABE IV – Low Intermediate (6.0 -8.9)

STANDARDS

The learner will be able to…

- **A. Develop and apply number sense to solve a variety of real-life problems and to determine if the results are reasonable.**
- **B. Apply data collection, data analysis, and probability to interpret, predict, and/or solve real-life problems.**
- **C. Apply algebraic concepts and methods to explore, analyze, or solve real-life problems.**
- **D. Use geometric properties, relationships, and methods to identify, analyze, and solve real-life problems**.

INDICATORS *Knowledge and Skills*	**BENCHMARKS** *Application Skills*	**SAMPLE ACTIVITIES** *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
A.1 Apply mathematical concepts and procedures to solve problems involving whole numbers and fractions.	A.1.1 Understand and apply basic number theory concepts including primes, composites, factors, and multiples.	**Basic Literacy Skills** A.1.1 The learner uses mental and written methods of calculation to generate results when solving problems using whole numbers of any size.
	A.1.2 Understand commutative and associative properties.	
	A.1.3 Locate fractions on a number line.	A.1.3 The learner uses a customary ruler to measure a variety of commonly used items.
	A.1.4 Identify concrete and symbolic representations of fractions.	A.1.4 The learner uses a newspaper to locate examples of fractions in news articles.
	A.1.5 Perform multiple operations (+, -, x, ÷) using common fractions, mixed numbers, and whole numbers by hand and using a scientific calculator.	**Workplace Literacy** A.1.5 The learner converts minutes to fractions on a timesheet, calculates expected pay and then determines how much of their pay for the period is spent on gas or bus fare for the week.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Family, Consumer, Health & Workplace Literacy*
The learner will be able to . . .		
A.2 Apply mathematical concepts and procedures to solve problems involving decimals.	A.2.1 Locate a decimal on a number line.	**Health Literacy** A.2.1 The learner reads a digital thermometer.
	A.2.2 Add, subtract, multiply and divide decimals.	A.2.2 The learner utilizes a supermarket advertisement to determine what part of several advertised items can be purchased with $.25, $.50 or $.75.
	A.2.3 Order a sequence of decimal numbers from smallest to largest.	A.2.3 The learner converts fractions of items (e.g. ½ filled glass, ¼ pizza, etc.) depicted in pictures and then orders the sequence (smallest to largest).
	A.2.4 Select appropriate operations to solve problems involving decimals.	**Family/Consumer Literacy** A.2.4 The learner describes the operation required to solve a series of problems determined by the teacher (e.g. ½ cents per gallon of gas, 1/10 of a dollar, etc.).
A.3 Apply mathematical concepts and procedures to solve problems involving percents. .	A.3.1 Recognize the relative size of percents.	A.3.1 The learner identifies a picture that represents a percentage when directed by the teacher (e.g. Two jars, one1/2 the size of the other, what % is jar 1 to jar 2).
	A.3.2 Identify concrete and symbolic representations of percents.	**Family Literacy** A.3.2 The learner figures out their expenses on rent or mortgage and determines what percentage of their income goes for this expenditure.
	A.3.3 Demonstrate how percents can be represented in a variety of equivalent forms.	A.3.3 The learner converts a list of percentages to other equivalent forms (fractions, decimal or whole) actual or pictorial.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Family, Consumer, Health & Workplace Literacy*
The learner will be able to . . .		
A.3 Apply mathematical concepts and procedures to solve problem involving percents.	A.3.4 Convert between fractions, decimals, and percents and calculate percentages.	**Health Literacy** A.3.4 The learner views a Nutrition Chart listing Foods, Calories and Fat and determines the percentage of fat to calories and what fractional part of the total diet this represents.
	A.3.5 Find the total when a percent is given.	**Family Literacy** A.3.5 The learner determines how much he would bring home if his rate of pay was increased by 10%.
	A.3.6 Solve problems involving percents.	A.3.6 The learner calculates the price of items with and without tax using store sales flyers and coupons.
A.4 Apply mathematical concepts and procedures to make estimations.	A.4.1 Use estimation strategies to predict results and to check the reasonableness of data.	A.4.1 The learner estimates the cost of several items selected from a catalog or online and then performs calculations to check data.
	A.4.2 Solve mathematical problems by estimating measurements in either U.S. system or in metric units.	A.4.2 The learner estimates the length and width of cloth needed to cover a table in the classroom or at home in U.S. standard measurements and metric units.
	A.4.3 Estimate total of items within a reasonable range.	**Family/Consumer Literacy** A.4.3 The learner plans a trip to Disneyland, determines distance, amount of gasoline, food, and lodging needed and then estimates the amount to budget and using the internet verifies costs.
B.1 Read, analyze, and interpret graphs and charts.	B.1.1 Interpret and compare data from a variety of graphs, charts, and maps.	**Workplace Literacy** B.1.1 The learner makes visual aids for depicting change patterns in business or industry, or where they work.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Family, Consumer, Health & Workplace Literacy*
The learner will be able to . . .		
B.1 Read, analyze, and interpret graphs and charts.	B.1.2 Understand and apply concepts of mean, median, mode, and range.	**Family/Consumer Literacy** B.1.2 The learner estimates one's daily expenses or explains the median salary or median years worked in company.
B.2 Solve whole number problems using ratio and proportions.	B.2.1 Understand the concept of a ratio and proportion.	B.2.1 The learner compares the price of products of different weights or capacities to determine best economy.
	B.2.2 Identify concrete and symbolic representations of ratios.	
	B.2.3 Demonstrate representation of ratios in other equivalent forms.	**Basic Literacy** B.2.3 The learner utilizes a newspaper to identify examples of ratio in news articles.
	B.2.4 Simplify ratio fractions.	
	B.2.5 Demonstrate the process of cross-multiplying to check proportions.	
	B.2.6 Solve ratio/proportion word problems.	A.2.6 The learner writes a word problem and trades with a partner to solve or the problems can be shared with the entire class to solve.
	B.2.7 Set and write a ratio/proportion.	B.2.7 The learner sets up a ratio/proportion utilizing a pocket-full of coins.
	B.2.8 Solve unit rate problems.	B.2.8 The learner utilizes supermarket advertisements to determine whether it is more costly to purchase a 6-pack of sodas or to buy 6 individual sodas.
	B.2.9 Demonstrate the ability to use ratio and proportion.	B.2.9 The learner creates 5 ratios and proportions utilizing only the demographics of the individuals in his/her classroom.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Family, Consumer, Health & Workplace Literacy*
The learner will be able to . . .		
C.1 Understand and use algebraic concepts to solve problems.	C.1.1 Identify concrete and symbolic representations of integers.	**Workplace Literacy** C.1.1 The learner uses a thermometer or other graphic to represent the progress of a fundraiser.
	C.1.2 Identify the relative size of integers and locate them on a number line.	
	C.1.3 Identify and understand absolute value.	
	C.1.4 Add, subtract, multiply, and divides integers.	**Basic Literacy Skills** C.1.4 The learner determines the number of bleachers necessary to accommodate a specific number of spectators at a local sports field.
	C.1.5 Solve simple problems by applying the algebraic order of operations.	C.1.5 The learner corrects a checking account register which has several bounced checks that have been accounted for incorrectly.
	C.1.6 Select the appropriate operation to solve specific problems involving integers.	C.1.6 The learner calculates workers hourly rate of pay when given a contract rate (yearly salary).
C.2 Use algebraic methods to solve problems.	C.2.1 Find square roots.	C.2.1 The learner completes an instructor-created number sequence which utilizes the concept of square roots.
	C.2.2 Write algebraic expressions.	**Health Literacy** C.2.2 Given data on the number of cases of an illness in the local area, the learner constructs a chart showing the percentage of cases.
	C.2.3 Solve one-step equations involving any of the mathematical operations.	
	C.2.4 Use number concepts including prime, factors, and multiples to build number sequence.	

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Family, Consumer, Health & Workplace Literacy*
The learner will be able to . . .		
C.2 Use algebraic methods to solve problems.	C.2.5 Use place value concepts of grouping numbers based on powers of 10 (scientific notation).	**Basic Literacy** C.2.5 The learner determines the distance from Earth to each of the planets using scientific notation.
D.1 Identify and apply geometric properties to problems.	D.1.1 Recognize and understand the basic properties of geometric shapes in two and three dimensions.	**Family Literacy** D.1.1 The learner creates plans for building a model of something of interest to a family member.
	D.1.2 Recognize types of angles and understand the relationship between angles (complementary, supplementary, vertical and adjacent).	**Basic Literacy** D.1.2 The learner measures the angles of streets on a map that do not intersect at right angles.
	D.1.3 Recognize types of triangles.	D.1.3 The learner identifies types of triangles hidden in a picture.
	D.1.4 Know the number of degrees in a triangle and a quadrilateral.	D.1.4 The learner demonstrates through drawing that a quadrilateral has 360 degrees and that half of a quadrilateral produces a triangle of 180 degrees
	D.1.5 Use appropriate geometric vocabulary.	D.1.5 The learner utilizes the formulas on the GED formula sheet to draw representations of geometric terms.
	D.1.6 Apply geometric formulae for perimeter, area, and circumference.	D.1.6 The learner uses a protractor, ruler, or compass to design their dream home and determines how many geometric shapes make up the design.
	D.1.7 Apply geometric formulae for volume of three-dimensional shapes.	D.1.7 The learner uses a formula to determine material required to build or cover an object in or around the home.
D.1 Identify and apply geometric properties to problems.	D.1.8 Apply a variety of strategies, geometric properties and formulae for two- and three-dimensional shapes to solve mathematical problems.	D.1.8 The learner draws a plan for a playground and determines the amount of wood, paint, sand; etc needed for the project.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Family, Consumer, Health & Workplace Literacy*
The learner will be able to . . .		

PERFORMANCE MASTERY STANDARDS	**TABE (9 – 10)** **Scale Score - Reading 567 or Higher** **Scale Score - Math 566 or Higher** **Scale Score -Language 560 or Higher** **Grade Equivalent 9+**	

MATHEMATICS
ASE I – Low Adult Secondary (9.0 – 10.9)

STANDARDS

The learner will be able to . . .

- **A. Develop and apply number sense to solve a variety of real-life problems and determine if the results are reasonable.**
- **B. Apply data collection, data analysis, and probability to interpret, predict, and/or solve real-life problems.**
- **C. Apply algebraic concepts and methods to explore, analyze or solve real-life problems.**
- **D. Uses geometric properties, relationships, and methods to identify, analyze, and solve real-life problems.**
- **E. Apply knowledge of standard measurements to real-life situations.**

INDICATORS *Knowledge and Skills*	**BENCHMARKS** *Application Skills*	**SAMPLE ACTIVITIES** *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
A.1 Understand and apply number sense to a variety of problems.	A.1.1 Compute fluently and accurately with whole numbers, fractional numbers and integers.	**Workplace Literacy** A.1.1 The learner calculates the effect of deposits and withdrawals on a checking account balance.
	A.1.2 Describe the uses and limitations of mathematical symbols (list all symbols including pi and square root symbols).	**Basic Literacy** A.1.2 The learner matches symbols with their meanings and receives extra credit for listing limitations.
	A.1.3 Compare the relationship between integers and whole numbers.	A.1.3 The learner adds hours on a time sheet that includes fractions or decimals.
	A.1.4 Use computation, estimation, and/or proportions to solve one step/multi step word problems involving integers.	**Consumer Literacy** A.1.4 The learner completes the 1040A tax forms with figures provided by the teacher.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
A.1 Understand and apply number sense to a variety of problems.	A.1.5 Solve problems using ratios such; as miles per hour.	**Basic Literacy** A.1.5 The learner uses a map of the United States to determine the rate a person was driving to get from point A to point B in a set amount of time.
	A.1.6 Recognize and utilize the properties of operations (commutative, associative, distributive).	
	A.1.7 Use estimation to predict results of a calculation and check the reasonableness of the solution.	A.1.7 The learner estimates the speed required to travel from one point to another to arrive by a specified time and calculates to verify reasonableness.
B.1 Read, analyze, and interpret graphs and charts.	B.1.1 Draw conclusions from graphic information.	B.1.1 The learner locates a graph from a recent newspaper and will write a paragraph detailing the main idea expressed by the numbers.
	B.1.2 Recognize trends and make predictions based on graphic information.	**Family/Health Literacy** B.1.2 The learner researches data on eating habits of America's youths, describes trends and makes predictions based upon the information.
	B.1.3 Construct and interpret information in graphs, charts, and tables.	B.1.3 After assisting learner in identifying parts of a household budget, the learner constructs a budget for their family using real or fictitious numbers and plot the budget on a graph.
	B.1.4 Explain charts, graphs, and tables found in newspapers and magazines.	B.1.4 The learner locates a chart or graph in a newspaper or magazine and explains the information.
B.2 Apply data analysis to interpret and predict outcomes.	B.2.1 Find mean, median, mode, and range in a set of data in a problem situation.	**Health Literacy** B.2.1 The learner analyzes information presented on a health and fitness, then answer questions.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
B.2 Apply data analysis to interpret and predict outcomes.	B.2.2 Explains the similarities, differences and the relationships between the various types of visual data (charts, graphs, tables, pictographs, maps).	**Workplace Literacy** B.2.2 The learner reads and interprets graphic materials as presented in a sample work production chart.
	B.2.3 Describe the characteristics and limitations of data samples.	
	B.2.5 Use a scientific calculator to solve problems (e.g., Finding current interest rate).	**Family Literacy** B.2. 5 The learner calculates the amount of interest annually on a credit card balance of $5,000 at 21% using a calculator.
	B.2.6 Construct scale drawings and interpret diagrams and maps.	
C.1 Understand and apply algebraic concepts to solve problems.	C.1.1 Apply beginning principles of algebra including: ratio and proportion, operations with signed numbers, solve one-step algebraic equations.	**Family Literacy** C.1.1 The learner brings to class their favorite recipe and computes double the recipe using a ratio.
	C.1.2 Use computation to solve problems involving monomials, binomials, polynomials.	C.1. 2 The learner charts current ages of their family and determines how old each will be in the 10 years.
	C.1.3 Solve multi-step equations and inequalities.	
	C.1.4 Apply basic factoring techniques to solve quadratic equations.	
	C.1.5 Plot graphs of linear equation and identifies the slope, the X and Y intercepts.	

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
C.1 Understand and apply algebraic concepts to solve problems.	C.1.6 Identify the language of Algebra and demonstrate the ability to write algebraic expressions.	
	C.1.7 Write one step equations from word problems and simple formulae.	**Basic Literacy** C.1.7 The leaner creates a word problem for each of the formulas on the GED formula sheet.
	C.1.8 Define and show examples of number properties, recognizes effects of operations on numbers, selects the appropriate operation for solving problem, and applies the correct order of operation.	**Workplace Literacy** C.1.8 The learner prepares an environmental and or corporate reports; finding the average temperature.
	C.1.9 Display numerical and graphic solutions in grids and plots.	C.1.9 The learner gathers information on the foods the family consumes in a week and plots the number of calories and fat content on a graph.
	C.1.10 Define and graph ordered pairs of integers on a rectangular coordinate plane.	
D.1 Identify and apply geometric properties to real-life problems.	D.1.1Use formulae to calculate: area, perimeter, volume, capacity, and mass.	**Family or Workplace Literacy** D.1.1 The learner selects one room from their home calculates the area for carpet, the house and calculates the perimeter.
	D.1.2 Solve problems involving U.S. and metric measurement.	D.1.2 The learner coverts measurements from D.1.1 to metric measures**.**
	D.1.3 Identify parallel and perpendicular lines, axes of symmetry, congruent and similar figures	D.1.3 The learner brings in a state map practices map reading and interpretation; learner determines the distance from one point to another and identifies highways that run parallel and perpendicular.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
D.1 Identify and apply geometric properties to real-life problems.	D.1.4 Identify and define Geometric terms.	**Basic Literacy** D.1.4 The learner verbally explains and draws each of the figures listed on the perimeter, area and volume sections of the GED formula sheet.
	D.1.5 Visualize solid objects and recognize their projections, cross sections, and graph points in 3-D.	D.1.5 The learner designs a model home and then determines the number of geometric shapes make up the design.
	D.1.6 Solve simple triangle problems using the triangle angle sum property and/or the Pythagorean Theorem.	
	D.1.7 Use the properties of special triangles, Isosceles and Equilateral, to solve problems.	
E.1 Apply knowledge of standard measurements to problems.	E.1.1 Select appropriate units and instrument of measurement to achieve the degree of accuracy and precision required in a real-life or workplace situation.	**Family Literacy** E.1.1The learner reads and integrating scales using a ¼ of a cup of flour in a recipe, and determines measurements in the recipe is cut in half, doubled, and quadrupled.
	E.1.2 Convert units of measurement into equivalent units of measurement using proportion. (e.g., 3 feet=1 yard; 18 feet=6 yards).	E.1.2 The learner converts measurements from D.1.1 to equivalent units feet, yards and inches using proportion.
	E.1.3 Use scientific notation to express large scale units of measurement (e.g., distance of the sun from earth = 93,678,912 miles = 93.678912×10^6).	E.1.3 The learner researches the distance from Earth to each of the other planets and then writes that distance in scientific notation.
	E.1.4 Demonstrate change of placement in converting measurement units in the metric system. (e.g., 353 mm = 35.3 cm; 2.5km = 25,000 cm).	E.1.4 The learner explains the sentence:" King Henry Died By Drinking Chocolate Milk."

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		

E.1 Apply knowledge of standard measurements to problems.	E.1.5 Distinguish ***which*** calculation is needed to use in word problems. (area, perimeter, or volume).	E.1.5 The learner measures a room in their home to determine and compare the total cost of various types of floor coverings.
PERFORMANCE MASTERY STANDARDS	**TABE (9-10)** **Scale Score - Reading 596** **Scale Score - Math 494** **Grade Equivalent 11+**	

MATHEMATICS
ASE II – High Adult Secondary (11.0 – 12.9)

STANDARDS

The learner will be able to. . .

- **A. Develop and apply number sense to solve a variety of real-life problems and to determine if the results are reasonable.**
- **B. Apply data collection, data analysis, and probability to interpret, predict, and/or solve real-life problems.**
- **C. Apply algebraic concepts and methods to explore, analyze or solve real-life problems.**
- **D. Use geometric properties, relationships, and methods to identify, analyze, and solve real-life problems.**

INDICATORS *Knowledge and Skills*	**BENCHMARKS** *Application Skills*	**SAMPLE ACTIVITIES** *Basic, Consumer, Family, Health & Workplace Activities*
The learner will be able to . . .		
A.1 Understand number sense in relationship to properties of advanced operations of whole numbers, integers and fractions.	A.1.1 Simplify numerical expressions with powers and roots, including fractional and negative exponents.	**Workplace Literacy** A.1.1 Using a calculator and inventory list, the learner computes total stock inventory (composed of small and large numbers).
	A.1.2 Understand and use the rules of exponents; and introduces the most common trigonometric ratios. (sin, cosine and tangent)	A.1.2 From a sample inventory list, the learner finds examples of integers, whole numbers and rational numbers.
	A.1.3 Use addition, subtraction, multiplication and division to solve problems involving monomials, binomials, polynomials, and algebraic fractions and mixed expressions.	

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
A.1 Understand number sense in relationship to properties of advanced operations of whole numbers, integers and fractions.	A.1.4 Explain the relationships among the solutions of an equation, the zeros of a function, the x/y-intercept of a graph, and the factors of a polynomial.	**Basic Literacy**
	A.1.5 Explain the meaning of absolute value. (e.g., |8| = 8) (e.g., Use number line; compare change in stock market value.	A.1.5 The learner examines the stock market reports and compares changes the stock market value of a particular stock over a week's time span.
	A.1.6 Use estimation to predict outcomes.	A.1.6 The learner utilizes several line graphs from a social studies text to predict an outcome beyond those shown on the x axis.
B.1 Collect and analyze data to solve problems.	B.1.1 Use mode and range as a means for effective decision making in analyzing data.	
	B.1.2 Draw conclusions and compares data.	**Consumer Literacy** B.1.2 The learner posts checks and deposits from a list of transactions to a check register, balances the statement and draws conclusions of whether additional purchases can be made.
	B.1.3 Represent two numerical variables and describe how the data points are distributed.	B.1.3 The learner determines how much money a person will have to make in order to achieve a set mean income for a year when only the income for January through November are given.
	B.1.4 Evaluate the reasonableness of conclusions drawn from the interpretation of data in a graphic format.	**Health Literacy** B.1.4 The learner analyzes a graphic representation of daily calorie requirements to maintain and lose weight and determines if he/she wants to lose weight the dietary requirement changes, and then logs what is eaten for a week to determine the daily calorie count.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
B.1 Collect and analyze data to solve problems.	B.1.5 Determine, from a given plot of data, whether it has strong or weak, positive or negative correlation.	**Basic Literacy** B.1.5 The learner locates a scatter plot graphic, explains the line of best fit and identifies those numbers that deviate from that line.
B.2 Apply concepts and methods to explore measurement s.	B.2.1 Select appropriate units and instrument of measurement to achieve the degree of accuracy and precision required in a real-life or workplace situation. (e.g., Applies logical objectives to decision-making process).	B.2.1 Each learner selects a portion of a classroom makeover project (e.g. painting the walls, molding around the wall, replacing flooring, etc.) measures the classroom and determines what materials and the amount needed, then use a Lowe's or Home Depot advertisement to determine the costs for a project.)For example, perhaps they want to put a 2-inch wide border around if the wood is sold by the foot or yard and then decide how much wood to buy).
	B.2.2 Use measuring tools and other devices such as: rulers, protractors, scales, meters, and gauges to collect data.	B.2.2 The learner designs a plan to construct a 12 square foot flower garden in honor of this class decides on the best shape and uses various tools to measure and complete the drawing.
B.3 Analyze data to predict outcomes and solve problems.	B.3.1 Find the mean, median, mode, and range of a set of data in a problem situation.	B.3.1 The learner determines how much money a person will have to make in order to achieve a set mean income for a year when only the income amounts for January through November are given.
	B.3.2 Analyze data by applying appropriate formulae for central tendency using appropriate calculator and/or computer technology.	**Consumer Literacy** B.3.2 The learner compares the price of products with different weights and determines which provides the best economy.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
B.3 Analyze data to predict outcomes and solve problems.	B.3.3 Use a scientific calculator to solve problems.	**Consumer Literacy** B.3.3 The learner figures the net result of an increase in their rent or mortgage payment of 7% and predicts the outcome of the increase (e.g. moving, losing the home, etc.).
	B.3.4 Determine probabilities through experiments and/or simulations and compares the results with predictions	B.3.4 The learner creates a table flipping coins. If 100 flips are completed, there should be a 50/50 ratio of heads to tails. The student will determine what his/her ratio of the activity is after completing 100 coin tosses.
	B.3.5 Use estimation to predict results of a calculation and check the reasonableness of the solution.	B.3.5 The learner estimates the number of chairs and tables in the classroom and calculates the number to check the reasonableness of the estimate.
C.1 Apply algebraic concepts to solve problems.	C.1.1 Plots graphs of linear equations and identify the slope (positive, negative, undefined and zero) and identifies the X and Y intercepts.	**Workplace Literacy** C.1.1 The learner compares the slopes of several handicap ramps in the community, evaluates them for ease of use and plots dimensions on a graph.
	C.1.2 Find the slope using the formula for slope or rise over run.	C.1.2 The learner finds a line graph in a magazine or newspaper and determines the slope of the line.
	C.1.3 Apply advanced principles of algebra including: ratio and proportion, operations with signed numbers.	

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
C.1 Apply algebraic concepts to solve problems.	C.1.4 Solve one/multi step equations and inequalities, writes one/multi step equations from word problems.	**Family Literacy** C.1.4 The learner makes up riddles involving family members' ages using inequalities (e.g. Who in the family is older than 2 and younger than 10? [X>2 and X<10; 1<x<10]).
	C.1.5 Define and show examples of number properties recognize effects of operations on numbers, select the appropriate operation for solving a problem, and apply the correct order of operations.	C.1.5 The learner researches newspapers and traces local temperatures over a two week period and determine the average temperature.
	C.1.6 Write and interpret expressions with more than one variable, factoring (e.g. algebraic and quadratic expressions).	
D.1 Use geometric concepts to solve real-life problems.	D.1.1 Calculate area, perimeter, volume, capacity, surface area, mass, and solve problems involving U.S. and metric measurements. (e.g., Measuring for carpet, window treatments and wallpaper; compute difference in miles per hour and kilometers).	D.1.1 The learner calculates how fast a car must travel to get from Atlanta to Macon in 1 hour and then converts the speed to kilometers.
	D.1.2 Identify types of triangles (right, isosceles, scalene, and equilateral) and find hypotenuse or a side using the Pythagorean theorem.	**Basic Literacy** D.1.2 The learner locates pictures of items to represent three types of triangles.
	D.1.3 Identify angle relationships (vertical, corresponding, complementary, supplemental and transversal).	D.1.3 The learner draws a transversal without a protractor then measures the angles using a protractor. And then verbally explains the angle measures and the relationships of the angles.

INDICATORS *Knowledge and Skills*	BENCHMARKS *Application Skills*	SAMPLE ACTIVITIES *Basic, Consumer, Family, Health & Workplace Literacy*
The learner will be able to . . .		
D.1 Use geometric concepts to solve real-life problems.	D.1.4 Identify parallel and perpendicular lines, axes of symmetry, identifies congruent and similar figures. (e.g., Building and designing structures).	**Workplace Literacy** D.1.4 The learner plans and builds a scale model of their workplace, classroom building, or apartment complex.
	D.1.5 Construct scale drawings and interprets diagrams and maps in real-life and workplace situations.	D.1.5 The learner determines the distance to several locations on a United States map using the map scale.
PERFORMANCE MASTERY STANDARDS	**Completion of GED**	